



Retrieve directories

ONTAP 9.11.1 REST API reference

NetApp
May 08, 2024

This PDF was generated from https://docs.netapp.com/us-en/ontap-restapi-9111/ontap/storage_volumes_volume.uuid_top-metrics_directories_endpoint_overview.html on May 08, 2024. Always check docs.netapp.com for the latest.

Table of Contents

- Retrieve directories 1
 - Storage volumes volume.uuid top-metrics directories endpoint overview 1
 - Retrieve directories with the greatest value performance metric or capacity metric 7

Retrieve directories

Storage volumes volume.uuid top-metrics directories endpoint overview

Overview

You can use this API to retrieve a list of directories with the greatest value performance metric or capacity metric for a specified volume. Use the `top_metric` parameter to specify which type of metric to filter for. This API is used to provide insight into IO metrics, namely `iops`, `throughput`, and `non_recursive_bytes_used`. This API only supports returning one metric per request.

Retrieve a list of the directories with the most IO activity

For a report on the directories with the most IO activity returned in descending order, specify the performance metric type you want to filter for by passing the `iops` or `throughput` property into the `top_metric` parameter. If the metric type is not specified, by default the API returns a list of the directories with the greatest number of the average read operations per second. The maximum number of directories returned by the API for a metric type is 25.

Failure to return list of directories with most IO activity

The API can sometimes fail to return the list of directories with the most IO activity, due to the following reasons:

- The volume does not have the activity tracking feature enabled.

- The volume does not have read/write traffic.

- The read traffic is served by the NFS/CIFS client filesystem cache.

- On rare occasions, the incoming traffic pattern is not suitable to obtain the list of directories with the most IO activity.

Failure to return the pathnames for the list of directories with most IO activity

The API can sometimes fail to obtain the filesystem pathnames for the list of directory entries, due to internal transient errors. In such cases, instead of the pathname, the API will return "{<volume_instance_uuid>:<fileid>}" for every directory entry. You can get more information about the directory entry by invoking the GET on the below API using the above obtained fileid. "GET /api/storage/volumes/{<volume_instance_uuid>}/files/{path}?inode_number=<fileid>"</fileid></volume_instance_uuid></fileid></volume_instance_uuid>

Retrieve a list of the largest directories

For a report on the largest directories returned in descending order, specify the capacity metric by passing the `non_recursive_bytes_used` property into the `top_metric` parameter. If the metric type is not specified, by default the API returns a list of directories with the greatest number of average read operations per second.

- GET /api/storage/volumes/{volume.uuid}/top-metrics/directories

Examples

Retrieving a list of the directories with the greatest average number of read operations per second

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/directories

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=iops.read"

# The Response:
{
  "records": [
    {
      "volume": {
        "name": "vol1",
      },
      "iops": {
        "read": 1495,
        "error": {
          "lower_bound": 1495,
          "upper_bound": 1505
        }
      },
      "path": "/dir1/dir2",
      "svm": {
        "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
        "name": "vs1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
          }
        }
      },
      "_links": {
        "directory": {
          "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2"
        },
        "metadata": {
          "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-
2df8e52ef864/files/dir1%2Fdir2?return_metadata=true"
        }
      }
    },
  ],
}
```

```

{
  "volume": {
    "name": "vol1",
  },
  "iops": {
    "read": 1022,
    "error": {
      "lower_bound": 1022,
      "upper_bound": 1032
    }
  },
  "path": "/dir3/dir4",
  "svm": {
    "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
    "name": "vs1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
      }
    }
  },
  "_links": {
    "directory": {
      "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-2df8e52ef864/files/dir3%2Fdir4"
    },
    "metadata": {
      "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-2df8e52ef864/files/dir3%2Fdir4?return_metadata=true"
    }
  },
  {
    "volume": {
      "uuid": "73b293df-e9d7-46cc-a9ce-2df8e52ef864",
      "name": "vol1",
      "_links": {
        "self": {
          "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-2df8e52ef864"
        }
      }
    },
    "iops": {
      "read": 345,
      "error": {

```

```

        "lower_bound": 345,
        "upper_bound": 355
    },
    "path": "/dir12",
    "svm": {
        "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
        "name": "vs1",
        "_links": {
            "self": {
                "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
            }
        }
    },
    "_links": {
        "directory": {
            "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-2df8e52ef864/files/dir12"
        },
        "metadata": {
            "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-2df8e52ef864/files/dir12?return_metadata=true"
        }
    }
},
"num_records": 3,
"_links": {
    "self": {
        "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-2df8e52ef864/top-metrics/directories?top_metric=iops.read"
    }
}
}

```

Retrieving a list of the directories with the most traffic with failure in obtaining the pathnames for the directories:

```

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=throughput.write"

# The Response:
{
  "records": [

```

```

{
  "volume": {
    "name": "fv"
  },
  "throughput": {
    "write": 24,
    "error": {
      "lower_bound": 24,
      "upper_bound": 29
    }
  },
  "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:1232}",
  "svm": {
    "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
    "name": "vs0",
    "_links": {
      "self": {
        "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
      }
    }
  }
},
{
  "volume": {
    "name": "fv"
  },
  "throughput": {
    "write": 12,
    "error": {
      "lower_bound": 12,
      "upper_bound": 22
    }
  },
  "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:6754}",
  "svm": {
    "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
    "name": "vs0",
    "_links": {
      "self": {
        "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
      }
    }
  }
},
{
  "volume": {

```

```

    "name": "fv"
  },
  "throughput": {
    "write": 8,
    "error": {
      "lower_bound": 8,
      "upper_bound": 10
    }
  },
  "path": "{4ec6d1ea-d5da-11eb-a25f-005056ac0f77:8654}",
  "svm": {
    "uuid": "0ba74c3e-d5ca-11eb-8fbb-005056ac0f77",
    "name": "vs0",
    "_links": {
      "self": {
        "href": "/api/svm/svms/0ba74c3e-d5ca-11eb-8fbb-005056ac0f77"
      }
    }
  }
},
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/volumes/4ec6d1ea-d5da-11eb-a25f-005056ac0f77/top-metrics/directories?top_metric=throughput.write"
  }
}
}

```

Example showing the behavior of the API when there is no read/write traffic:


```
# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/directories?top_metric=throughput.write"

# The Response:
{
  "records": [
  ],
  "num_records": 0,
  "notice": {
    "message": "The activity tracking report for volume \"FV\" in SVM
\"vs0\" returned zero records. Check whether the volume have read/write
traffic. Refer to the REST API documentation for more information on why
there might be no records.",
    "code": "124518418"
  },
  "_links": {
    "self": {
      "href": "/api/storage/volumes/9af63729-8ac8-11ec-b1bc-
005056a79da4/top-metrics/directories?top_metric=throughput.write"
    }
  }
}
```

Retrieve directories with the greatest value performance metric or capacity metric

GET /storage/volumes/{volume.uuid}/top-metrics/directories

Introduced In: 9.10

Retrieves a list of directories with the greatest value performance metric or capacity metric.

Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID

Name	Type	In	Required	Description
top_metric	string	query	False	Type of performance metric or capacity metric. <ul style="list-style-type: none"> • Default value: 1 • enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]
max_records_per_volume	integer	query	False	Max records per volume.
iops.read	integer	query	False	Filter by iops.read
iops.write	integer	query	False	Filter by iops.write
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
svm.uuid	string	query	False	Filter by svm.uuid
svm.name	string	query	False	Filter by svm.name
volume.name	string	query	False	Filter by volume.name
path	string	query	False	Filter by path
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound

Name	Type	In	Required	Description
throughput.read	integer	query	False	Filter by throughput.read
throughput.write	integer	query	False	Filter by throughput.write
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	<p>The default is true for GET calls. When set to false, only the number of records is returned.</p> <ul style="list-style-type: none"> • Default value: 1
return_timeout	integer	query	False	<p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
notice	notice	Optional field that indicates why no records are returned by the volume activity tracking REST API.
num_records	integer	Number of records.
records	array[top_metrics_directory]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "notice": {
    "code": "111411207",
    "message": "No read/write traffic on volume."
  },
  "records": {
    "_links": {
      "metadata": {
        "href": "/api/resourcelink"
      },
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "iops": {
      "error": {
        "lower_bound": 34,
        "upper_bound": 54
      },
      "read": 10,
      "write": 5
    },
    "path": "/dir_abc/dir_123/dir_20",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "throughput": {
      "error": {
        "lower_bound": 34,
        "upper_bound": 54
      }
    }
  }
}
```

```

    },
    "read": 3,
    "write": 20
  },
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
}

```

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

```

{
  "error": {
    "arguments": {
      "code": "string",
      "message": "string"
    },
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}

```

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

notice

Optional field that indicates why no records are returned by the volume activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

_links

Name	Type	Description
metadata	href	
self	href	

top_metric_value_error_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.
upper_bound	integer	Upper bound of the nominal value of a metric.

iops

Name	Type	Description
error	top_metric_value_error_bounds	

Name	Type	Description
read	integer	Average number of read operations per second.
write	integer	Average number of write operations per second.

[_links](#)

Name	Type	Description
self	href	

svm

Name	Type	Description
_links	_links	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

throughput

Name	Type	Description
error	top_metric_value_error_bounds	
read	integer	Average number of read bytes received per second.
write	integer	Average number of write bytes received per second.

volume

Name	Type	Description
_links	_links	
name	string	The name of the volume.

Name	Type	Description
uuid	string	<p>Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move.</p> <ul style="list-style-type: none"> • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6

top_metrics_directory

Information about a directory's IO metrics.

Name	Type	Description
_links	_links	
iops	iops	
path	string	Path of the directory.
svm	svm	
throughput	throughput	
volume	volume	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Copyright information

Copyright © 2024 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.